

## REMARKS

Claims 1 to 14 are pending in the application; claim 15 and 16 are canceled.

### Drawings

The drawings are objected to under **37 CFR 1.83(a)** because features of the claims are not illustrated:

- (1) sealing lip and shell made of different materials (claim 3);
- (2) conveying structure on first and/or second conical surface (claim 11);
- (3) conveying structure having grooves, wave-shaped profiles, ribs (claim 12);
- (4) oppositely oriented conveying structures on the first and second surfaces (claim 13);
- (5) sealing lip prestressed (claim 14);
- (6) wave-shaped profile in the circumferential direction (claim 15);
- (7) wave-shaped profile generated by an appropriate shaping of support ring (claim 16).

In regard to (1): new drawing sheet Fig. 1A is submitted herewith that illustrates the different materials by different cross-hatching.

In regard to (2), (3), (4): new Fig. 2 is submitted herewith that shows conveying structures 27, 28 (also indicated in Fig. 1A) comprised of ribs R or grooves G; the ribs or grooves of the conveying structures 27, 28 extend opposite to one another. It is respectfully submitted that such conveying structures are well known in the art (see, for example, US 3,633,927 showing ribs and grooves or US 6,182,975 showing a thread configuration) and a person of ordinary skill in the art is aware of configurations and designs of such structures as evidenced by the two references (US 3,633,927 issued in 1970!).

In regard to (5): Fig. 1A shows arrow F that schematically indicates the action of the spring force.

In regard to (6) and (7): the claims 15 and 16 have been canceled.

The drawings are objected to because the angles  $\alpha$  and  $\beta$  must be shown between two lines. This has been corrected in Fig. 1; new drawing Fig. 1A also shows the angle correctly between two lines.

The drawings are objected to as failing to comply with **37 CFR 1.84(p)(5)** because they include a reference character not mentioned in the specification. The examiner refers to numeral "9". It is respectfully submitted that reference numeral 9 is mentioned in paragraph 10, end of first line, of the specification.

The specification has been amended to include a brief description of the new drawing sheets.

Reconsideration and withdrawal of the objection to the drawings are therefore respectfully requested.

**Claim Rejections - 35 U.S.C. 112**

Claim 13 stands rejected under 35 U.S.C. 112, 2nd paragraph, as being indefinite. The claim language has been amended and now positively recites that each of the conical surfaces has a conveying structure.

Reconsideration and withdrawal of the rejection of claim 13 pursuant to 35 USC 112 are therefore respectfully requested.

**Rejection under 35 U.S.C. 102**

Claims 1, 2, and 14 stand rejected under 35 U.S.C. 102(b) as being anticipated by *Reinhardt et al.* (US 6,520,506).

Claim 1 has been amended with features relating to the first conical surface; these features are disclosed in paragraphs 13 and 18 of the specification.

Claim 1 now sets forth that the first contact angle causes during operation of the sealing ring a conveying action of the medium to the sealing edge so that the sealing edge is cooled and lubricated by the medium and that the first conical surface has a first conveying structure that improves the conveying action of the medium toward the sealing edge for cooling and lubricating the sealing edge.

The configuration as claimed ensures that at all times a sufficient amount of lubricant is present at the sealing edge for cooling and lubricating the sealing edge. This improves the service life of the sealing ring and optimizes the sealing action.

*Reinhardt et al.* discloses contact angles similar to the ones used in the present invention. However, *Reinhardt* is silent as to a conveying structure that transports the medium toward the sealing edge for improving the lubrication and cooling action at the sealing edge. No such conveying structure is disclosed.

Reconsideration and withdrawal of the rejection of the claims 1, 2, 14 pursuant to 35 USC 102 are therefore respectfully requested.

**Rejection under 35 U.S.C. 103**

Claim 3 stands rejected under 35 U.S.C. 103(a) as being unpatentable over

*Reinhardt et al.* (US 6,520,506) and any one of *Johnston* (US 6,729,624) or *Bainard* (US Re 33,029) or *Otto* (US 6,050,570) or *Matsushia* (US 6,128,975).

Claims 4-10 stand rejected under 35 U.S.C. 103(a) as being unpatentable over *Reinhardt et al.* (US 6,520,506) and *Mohr* (US 6,722,659) and *Hsokawa et al.* (US 6,367,811).

In regard to claims 3 to 10, applicant respectfully submits that neither *Rienhardt et al.* nor the other cited references show a conveying structure that transports the medium toward the sealing edge for improving the lubrication and cooling action at the sealing edge. Claim 1 as amended and dependent claims 3-10 should thus be allowable.

Claims 11 and 12 stand rejected under 35 USC 103(a) as being unpatentable over *Reinhardt et al.* (US 6,520,506) and *Onuma et al.* (US 6,036,193).

*Onuma et al.* describe a conveying structure with pumping ribs 40 arranged on the air side of the seal for transporting escaped medium (oil) back to the oil side. There is no conveying structure on the oil side that improves transport on the oil side to the sealing edge for improving cooling and lubrication at the sealing edge. The cited reference teaches that oil or lubricant must be returned to the oil reservoir from the air side; there is no suggestion or motivation to provide the oil side with a conveying structure that would operate in a direction opposite to the conveying ribs on the air side and thus would be counterproductive to the effect to be provided by the pumping ribs 40.

Claim 1 as amended is therefore not obvious in view of the combined teachings of *Reinhardt et al.* and *Onuma et al.*

Claim 13 stands rejected under 35 USC 103(a) as being unpatentable over *Reinhardt et al.* (US 6,520,506) and *Onuma et al.* (US 6,036,193) and further in view of *Dietle* (US 6,494,462).

Claim 1 as amended is believed to be allowable for the reasons set forth above and claim 13 should be allowable as dependent claim.

Claim 15 stands rejected under 35 USC 103(a) as being unpatentable over *Reinhardt et al.* (US 6,520,506) and *Johnston et al.* (US 5,427,387). Claim 15 has been canceled.

Claim 16 stands rejected under 35 USC 103(a) as being unpatentable over *Reinhardt et al.* (US 6,520,506) and *Johnston et al.* (US 5,427,387) and further in view of

*Mohr (US 6,722,659) and Hsokawa et al. (US 6,367,811).* Claim 16 has been canceled.

### **CONCLUSION**

In view of the foregoing, it is submitted that this application is now in condition for allowance and such allowance is respectfully solicited.

Should the Examiner have any further objections or suggestions, the undersigned would appreciate a phone call or **e-mail** from the examiner to discuss appropriate amendments to place the application into condition for allowance.

Authorization is herewith given to charge any fees or any shortages in any fees required during prosecution of this application and not paid by other means to Patent and Trademark Office deposit account 50-1199.

Respectfully submitted on August 22, 2006,

/Gudrun E. Hockett/

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Encl.: replacement drawing sheet Fig. 1 and new sheets Fig. 1A, Fig. 2 (3 sheet/s)